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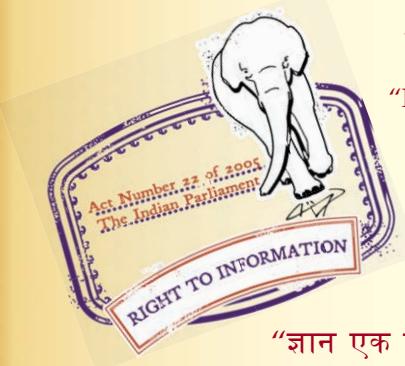
“Step Out From the Old to the New”

IS 10974-3 (1984): Code for hygienic condition for production, transport, storage and ditribution of indigenous milk products, Part 3: Coagulated products CHHANA and CHHANA based sweetmeats [FAD 15: Food Hygiene, Safety Management and Other Systems]

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Bhartṛhari—Nītiśatakam

“Knowledge is such a treasure which cannot be stolen”



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Indian Standard

CODE FOR HYGIENIC CONDITIONS FOR
PRODUCTION, TRANSPORT, STORAGE
AND DISTRIBUTION OF
INDIGENOUS MILK PRODUCTS

PART 3 COAGULATED PRODUCTS
CHHANA AND CHHANA BASED SWEETMEATS

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
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Indian Standard

CODE FOR HYGIENIC CONDITIONS FOR PRODUCTION, TRANSPORT, STORAGE AND DISTRIBUTION OF INDIGENOUS MILK PRODUCTS

PART 3 COAGULATED PRODUCTS CHHANA AND CHHANA BASED SWEETMEATS

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(*Continued on page 12*)

Indian Standard

CODE FOR HYGIENIC CONDITIONS FOR PRODUCTION, TRANSPORT, STORAGE AND DISTRIBUTION OF INDIGENOUS MILK PRODUCTS

PART 3 COAGULATED PRODUCTS *CHHANA AND CHHANA BASED SWEETMEATS*

0. FOREWORD

0.1 This Indian Standard (Part 3) was adopted by the Indian Standards Institution on 5 March 1984, after the draft finalized by the Food Hygiene Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 Indigenous milk products, such as *KHOA*, *KHOA* based sweets, *DAHI*, *CHHANA RASOGOLLA*, are produced in large quantities in India. It has been often observed that proper hygienic conditions are not maintained in production, transport, storage and distribution of these indigenous milk products and there is a considerable scope for improving the hygienic conditions in these respects. Unless proper hygienic norms are adopted, the consumption of such indigenous milk products may be a potential health hazard to the consumer.

0.3 As the process of production, handling, transport, storage and distribution of the various indigenous milk products differ very widely, codes of hygienic conditions for different milk products are being published in parts. The first part covers *KHOA* and *KHOA* based sweets, Part 2 covers *DAHI*, Part 4 covers *KULFI* and Part 5 covers *SHRI-KHAND*.

0.4 *CHHANA* (also called *PANEER* in some parts of country) refers to the milk product prepared by the acid coagulation of whole or skim milk, cow or buffalo or a combination thereof, at its near-boiling temperature followed by removal of whey by straining. The acids commonly used are lactic or citric in both natural (citrus fruits juices, whey from earlier batches of preparation, sour milk) and chemical forms. It constitutes one of the two chief bases (the other being, *KHOA*, *KHAVA* or *MAVA*) for the preparation of indigenous milk sweetmeats, such as, *RASOGOLLA*, *SANDESH*, *KHEER-PANEER* (*CHHANA KHEER*),

PANTOOAH, CHHANA MURGI, etc. Conventionally, *CHHANA* is prepared in open mild steel vessels in which just boiled milk is transferred and the coagulant promptly and slowly added with gentle stirring with a laddle to mix it properly and left for a clear coagulation to take place. The *CHHANA* lumps are then strained through a clean muslin cloth to drain away the whey. There is no protection against contamination from extraneous matter, such as dust, ash, flies and posts. It is packaged improperly using leaf or ordinary paper (including newspaper), lined bamboo baskets or earthenware vessels for overnight transportation. Since *CHHANA* has fairly high fat and protein content, contains minerals and fat soluble vitamins A & D with low sugar content, it provides a good medium for growth of many microorganism resulting in early deterioration of the product. However, because of less sugar and added acid for coagulation, its shelf life is about 3 to 4 days at 5°C to 10°C in a well wrapped condition. It is, therefore, necessary to protect the commodity during production, transport, storage and distribution from extraneous contamination to maintain, and prevent its original characteristics from deterioration. This standard provides guidelines for maintaining optimum hygienic conditions in production, storage and distribution of *CHHANA* and *CHHANA* based sweetmeats.

0.5 It is expected that this standard would be of considerable assistance to local health authorities in enforcing proper hygienic conditions in the interest of public health.

0.6 This code is subject to the provisions of the *Prevention of Food Adulteration Act, 1954* and rules framed thereunder as amended from time to time and other local regulations.

0.7 While preparing this standard, considerable assistance has been provided by National Dairy Research Institute, Karnal.

1. SCOPE

1.1 This code (Part 3) prescribes the hygienic conditions and practices for production, storage, transportation and distribution of *CHHANA* and *CHHANA* based sweetmeats.

2. SITE AND PREMISES

2.1 Site and premises should be as given in 2 of IS : 10974 (Part 1)-1984*.

*Code for hygienic conditions for production, transport, storage and distribution of indigenous milk products: Part 1 *KHOA* and *KHOA* based sweets.

3. EQUIPMENTS

3.1 Heating Pans — Traditionally, *KADAHIES* (heating pans) of iron are generally used in small scale operations for heating milk on open fire for preparing *CHHANA*. *KADAHIES* shall be constructed with hemispherical or dished bottom and should have rigid welded handles. The joints in the pans shall be welded and finished smooth. The component parts shall not be riveted. The *KADAHIE* may be of 20 or 50 litres capacity. Alternatively, the heating-cum-coagulation of milk can be accomplished in stainless steel jacketed pans, heated by passing steam through the jacket.

3.2 Heating of Milk

3.2.1 Ovens of different types are used for heating of milk in the small scale production of *CHHANA*. Wood, charcoal, coal, cow dung cake, kerosene or gas, are normally used as fuel.

3.2.2 When open hearth is used, the fuel used for burning should not give rise to smoke or obnoxious odour which may be absorbed by the product. Adequate protection must be provided to ventilate the combustion products and to prevent the ash and unburnt material coming in contact with the product.

3.2.3 Where heating is done by steam in large scale operations, the pan shall conform to IS : 2829-1979*. Stainless steel jacketed, rounded bottomed open pan provided with steam line, steam control and safety valves, pressure gauge and cold water line in the jacket, with steam trap and air outlet may be used. There should be arrangement for tilting the pan and also keeping it fixed in normal position.

3.3 Stirrers — After first boil, milk is allowed for a few moments to come down to around 80°C and then the coagulant is added. Mild steel, hand operated ladles are generally used for stirring boiled milk. Stainless steel or aluminium alloy stirrers with flattened end on one side may preferably be used in place of iron. The stirrers shall be such as to resist acid action of the coagulant. Suitable arrangement may be made on the brim of the heating pan for resting of stirrers.

3.4 All the components and metallic parts which come in contact with milk and *CHHANA* shall be constructed from iron or stainless steel conforming to grade 07 Cr 18 Ni 9 of IS : 1570 (Part 5) - 1972† or

*Specification for steam jacketed ghee pans (stainless steel) (*first revision*).

†Schedules for wrought steels for general engineering purposes: Part 5 Stainless and heat-resisting steels (*first revision*).

aluminium conforming to IS Designations 31000 (NS 3), 52000 (NS 4) or 53000 (NS 5) of IS : 737-1974*. Copper and its alloys, cadmium, lead and zinc shall not come in contact with *CHHANA* at any stage.

3.5 Nonmetallic materials — if used for sealing or gasketing, shall be nontoxic; nonabsorbent and shall not impart any flavour and be inert to milk, *CHHANA* or any cleaning solution normally used.

3.6 Fabrication — All surfaces coming in contact with milk or *CHHANA* shall be finished smooth, free from pits, crevices or other constructional features which might inhibit satisfactory sanitation.

3.7 Strainer — Whatever method of straining, immediate or delayed, a clean bleached dirt free, fresh or washed piece of muslin cloth shall be used for the purpose. The cloth should be strong enough to hold the weight of the coagulum alongwith the trapped whey when hung up for draining out the whey or when pressed in hoops for '*PANEER*' preparation for use in cooked vegetable dishes.

4. RECEPTION DOCK

4.1 Milk brought to the processing unit shall be received in an airy, clean, spacious enclosure. Usually fresh sweet, clean milk free from colostrum and in every way fit for human consumption shall be used. However, slight developed acidity lowers the amount of coagulant required. The milk shall be free from adulterants, preservatives and any matter foreign to milk.

5. TRANSFER OF *CHHANA* TO CONTAINERS

5.1 When the *CHHANA* drains to the desired moisture level, it is removed from the muslin cloth and stored either in bulk or transferred to smaller containers of half to one kg capacity. Usually aluminium or enamelled iron containers are used for this purpose after cutting the mass with clean knives (see IS : 2498-1963†).

5.1.1 When *PANEER* is to be used for cooking vegetable dishes, the drained mass after having been cut into smaller blocks is immersed in cold (4 to 6°C) brine solution (5 percent sodium chloride) for 2 to 3 hours. The salt used should be of edible quality (see IS : 253-1970‡).

5.1.1.1 The salted and chilled *PANEER* pieces after removing from brine, shall be wiped with a clean cloth and packaged for cold storage or marketing.

*Specification for wrought aluminium and aluminium alloys, sheet and strip (for general engineering purposes) (second revision).

†Specification for cheese knife.

‡Specification for edible common salt (second revision).

5.1.2 The metallic containers used in such transfers, with which the product comes in contact should be nontoxic, corrosion resistant, resistant to mild acids, and should be kept thoroughly cleaned and sanitized before use.

5.1.3 While handling for transfer or cutting, direct touch by hands should be avoided to safeguard against contamination by body microflora.

5.1.4 *Printing* — The seal used for printing or embossing on the surface of the product should be made of nontoxic material. It should be cleaned and sanitized before each usage by dipping in a sanitizing solution and wiping with a clean dry cloth in order to prevent it from becoming a source of contamination.

6. PACKING AND TRANSPORT

6.1 At present *CHHANA* sold in the market is not packaged satisfactorily. During its transport various types of unspecified wrapping materials like tree leaves, ordinary paper, parchment paper, etc, are used for wrapping the product and for covering the *CHHANA* containers. Bamboo baskets with leaf lining and steel buckets are the usual containers for overnight journeys while for short journeys, no packaging is done at all. Buses, trains or other vehicles are the various means of transport.

6.2 It is desirable always to provide modern packaging materials which include parchment or laminated pouches, plastic (polyethylene, polyvinyl chloride, nylon, polyester), bags/pouches, etc. Wrapping should be done as soon as the product is manufactured and moulded/cut into shape. These materials shall be placed in bamboo baskets for protection.

6.2.1 The packaging material purchased from approved sources shall preferably be pre-sanitized and stored under dry and hygienic conditions. If parchment paper used is suspected to be exposed, it could be dipped in boiling water prior to use. Treating the paper in chlorine solution (15 to 20 ppm) prior to use, would also be satisfactory. An ideal wrapper should be completely opaque, sealable, impermeable to odour, moisture and grease and should have sufficient physical rigidity to preclude damage during packing.

6.2.2 The secondary outer packaging that is the bamboo basket or the bucket shall also be pre-sanitized before use and in between two uses.

6.3 Storage at Manufacturing Centre — *CHHANA* should preferably be stored at refrigeration temperature, 5 to 10°C, since it has a very

low keeping quality when stored at room temperature, *CHHANA* made from fresh sweet milk keeps good for 5 to 7 days at 5 to 10°C while *PANEER* made from slight acid milk has a storage life of 3 to 4 days at 5 to 10°C.

6.4 Transport — During the transport of *CHHANA* from manufacturing centres to urban markets, precautions should be taken not to expose the product to sunlight, dust and contamination. It is advisable to make suitable arrangement to maintain the product below 10°C during transport.

7. STORAGE AT URBAN MARKET

7.1 *CHHANA* blocks should be maintained at 5 to 10°C during storage. They should preferably be stored in a wrapped condition. The product should, however, be disposed of for conversion into sweetmeat preparation well in time before deterioration due to microbial activity sets in. It is advisable not to store the product for more than a week at 5 to 10°C or more than 24 to 48 hours at 22 to 30°C.

7.1.1 It is recommended that suitable refrigeration facilities be provided to the apartments used for storing *CHHANA* for maintaining the product at 5 to 10°C.

7.1.2 The apartment used for storage should be dust and insect proof and also rodent proof. The shelves used for placing *CHHANA* may either be made from or covered with laminated wooden panels, stainless steel sheets or glazed tiles. The shelves should be maintained in a thoroughly clean condition. They should be periodically washed thoroughly with suitable detergent solutions and cleaning agents, sanitized and dried well before *CHHANA* packages are placed.

8. SALE AND DISTRIBUTION

8.1 Although, *CHHANA* is at present generally marketed soon after production in an unpacked or crudely packed condition depending on the distance of the sale point, it is a general practice to handle *CHHANA* by more than one person with bare hands for the purpose of testing the samples and during weighing while selling to retailers. The product also comes in contact with the pan of the balance which is kept exposed and rarely cleaned. Such practices lead to the contamination of the product with micro-organisms and if such a product is subsequently stored for periods exceeding 18 to 24 hours at room temperature prior to conversion into sweetmeats, it provides an opportunity for the micro-organisms to multiply. Some of the organisms like toxigenic staphylococci may produce heat stable enterotoxins without producing

any visible defect in the product. This may lead to outbreak of food poisoning when sweetmeats prepared from these products are consumed.

8.2 It is, therefore, advisable to protect the product from being touched by hands. Use of metallic scoops, ladles, spoons or cheese triers which have been cleaned and sanitized, is recommended for sampling, testing and weighing.

8.2.1 In the market the manufactured 'wet' *CHHANA* invariably wrapped in cloth and pressed between stone weights to remove excess whey before being offered for sale. This cloth also shall be of good quality as mentioned earlier (3.7). Also the stone weights should be cleaned and pre-sanitized.

8.3 One block from each lot of *CHHANA* may preferably be kept apart for such sampling and testing. This practice will ensure storage of other blocks in a protected condition.

8.4 It is recommended to cover the pan of the balance with a clean sheet of parchment paper before any block of *CHHANA* is placed over it for weighting.

9. CHHANA BASED SWEETS

9.1 *CHHANA* (or *PANEER*) is the main basic raw material for several varieties of sweetmeats like *RASOGOLLA*, *SANDESH*, *CHHANA-MURGI*, etc. The methods of preparation vary considerably in different parts of the country but one of the essential steps is the addition of sugar in all the preparations. It is added either as crystals, as a powder or as a more or less concentrated syrup and *CHHANA* is further processed under controlled heating conditions as in case of *SANDESH* and *CHHANA MURGI*; or further heat processed with some other ingredients (for example *KHOA*); or may be dipped in sugar syrups as in *PANTOOAH*, or cooked in sugar syrup as in *RASOGOLLA* or boiled in milk with added sugar as in *KHEER-PANEER*. Edible colours and flavourings are also added in some preparations. In the preparation of some sweetmeats other ingredients like maida flour, condiments, baking powder, etc, are also added.

9.2 Sweetening Agent — Cane sugar is the most commonly used sweetening agent in the preparation of *CHHANA* based sweets. Sugar used should be of good quality (see IS : 1679-1960*).

9.3 The sugar should be clean and properly packed, preferably in multi-wall paper bags and stored in a clean dry place to prevent contamination from moulds and yeasts. If sugar is improperly packed in dirty gunny

*Specification for sugar used in food preservation industry.

or cloth bags and handled carelessly it may become heavily contaminated particularly during monsoon. It is preferable to purchase sugar during dry season and store it in a clean dry place.

9.4 If sugar is suspected to be heavily contaminated it may be made into a syrup and boiled for a few minutes before adding to *CHHANA*.

10. OTHER INGREDIENTS

10.1 The ingredients used shall conform to the specifications given in IS : 5550-1970*. Maida used in preparation of *GULAB JAMAN* shall conform to specifications given in IS : 1009-1979†.

10.2 Flavouring Materials — Various artificial or imitation flavours are added to *CHHANA* based sweets. As most of them are prepared and maintained in the form of alcoholic solutions and used in small concentrations they are not considered to be significant sources of contamination.

10.3 Aqueous flavour extract may be sterilized by pasteurization at 63°C for 30 minutes without any serious deterioration in the flavour.

10.4 Colouring Materials — Only food grade colours permitted under *The Prevention of Food Adulteration Act, 1954* should be used in the *CHHANA* based sweet preparation.

11. STORAGE AND SALE OF *CHHANA* BASED SWEETS

11.1 Restaurants, catering establishments, *HALWAIS*, sweetmeat shops and other selling outlets which store and sell *CHHANA* based sweets in retail to customers should be fully licensed for the purpose and fulfil all the hygienic requirements prescribed by the appropriate authorities in respect of public catering places.

11.2 The floor and drains of the premises and every bench, counter, stall or other places where *CHHANA* based sweets are stored or exposed for sale should be washed and cleaned effectively everyday using an odourless bactericidal solution (for example, Quaternary ammonium compounds). There should be sufficient amount of clean water and detergents for cleaning of utensils and arrangements for toilet, washing of hands, plates and disposal of wrapping materials, if any.

11.3 It is desirable to store *CHHANA* based sweets at a low temperature (below 4°C) so that they will have a longer shelf life. Suitable cold storage facilities may, therefore, be provided.

*Specification for *BURFI*.

†Specification for *MAIDA* for general purposes (second revision).

12. DISTRIBUTION

12.1 Sweetmeats prepared from *CHHANA* should not be allowed to get contaminated during distribution which shall be affected in the most hygienic and efficient way.

12.2 Products stored for a long period should not be distributed.

12.3 The product should be distributed in suitable pressurized containers which may be kept closed. In case of bulk delivery, the containers should have well fitting lids.

13. EMPLOYEE HYGIENE

13.1 Employee hygiene should be as given in 13 of IS : 10974 (Part 1)-1984*.

*Code for hygienic conditions for production, transport, storage and distribution of indigenous milk products : Part 1 *KHOA* and *KHOA* based sweets.

(*Continued from page 2*)

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